Amendments to the Claims

1. (previously amended) A semiconductor bridge igniter comprising:

a substrate;

an electrical bridge structure disposed on the substrate, the bridge structure being configured to have a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section, the bridge structure consisting essentially of a layer of titanium disposed over a layer of semiconductor material having a negative coefficient of electrical conductivity at temperatures above ambient temperature; and

a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed.

2. (original) The semiconductor bridge igniter of claim 1 further comprising a pair of electrical leads, one connected to a respective one of the electrically conductive lands.

3. (original) The semiconductor bridge igniter of claim 2 further including a source of electrical energy connected to each of the electrical leads to define an electrical circuit extending from one lead, to one of the electrically conductive lands, through the bridge section, thence to the other electrically conductive land and the other electrical lead.

4. (original) The semiconductor bridge igniter of claim 3, wherein the source of electrical energy comprises a capacitor.

5. (original) The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the substrate comprises silicon having a silicon dioxide layer, and wherein the electrical bridge structure is disposed upon the silicon dioxide layer.

6. (original) The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the substrate comprises sapphire.

7. (original) The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the material having a negative coefficient of electrical conductivity comprises polysilicon.

8. (original) The semiconductor bridge igniter of claim 7 wherein the polysilicon is undoped.

9. (original) The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the material having a negative coefficient of electrical conductivity comprises crystalline silicon.

10. (original) The semiconductor bridge igniter of claim 9 wherein the crystalline silicon is undoped.

11. (original) The semiconductor bridge igniter of claim 1, claim 2 or claim 3 disposed in contact with an energetic material charge contained within the header of an igniter assembly.

12. (currently amended) A semiconductor bridge igniter comprising:

a substrate;

an electrical bridge structure disposed on the substrate, the bridge structure comprising a layer of a semiconductor material having a negative coefficient of electrical conductivity at temperatures above ambient temperature and having disposed thereover a layer of titanium, the titanium having been preconditioned to be stabilized against temperature-induced variations in resistance, the bridge structure comprising a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section; and

a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed~~, made by the method comprising depositing a layer of semiconductor material and an exposed layer of titanium thereon on a substrate in a bridge formation, forming~~

~~contact pads at opposite ends of the bridge formation, and preconditioning the titanium semiconductor bridge igniter by heating it to an elevated temperature to stabilize it against temperature-induced variations in bridge electrical resistance~~.

13. (currently amended) The semiconductor bridge igniter of claim 12 ~~including~~ comprising titanium preconditioned by heating the igniter to an elevated temperature of from about 37°C to about 250°C.

14. (currently amended) The semiconductor bridge igniter of claim 12 ~~including~~ comprising titanium preconditioned by heating the igniter to an elevated temperature of from about 100°C to 250°C.

15. (original) The semiconductor bridge igniter of claim 1, wherein said pair of electrically conductive lands comprises a metal.

16. (currently amended) The semiconductor bridge igniter of claim 15, wherein ~~said~~ the electrically conductive lands comprise a metal ~~is~~ selected from the group comprising aluminum, gold, silver, chromium, and combinations thereof.

17. (previously added) The semiconductor bridge igniter of claim 12, claim 13 or claim 14 further comprising a pair of electrical leads, one connected to a respective one of the electrically conductive lands.

18. (previously amended) A semiconductor bridge igniter consisting essentially of:

a substrate;

an electrical bridge structure disposed on the substrate, the bridge structure being configured to have a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section, the bridge structure consisting essentially of a layer of titanium disposed over a layer of semiconductor material; and

a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed.

19. (previously added) The semiconductor bridge igniter of claim 1, claim 12 or claim 18 wherein the semiconductor material has, at ambient temperatures, a greater resistivity than the layer of titanium and, at an elevated temperature lower then the melting point of the layer of titanium, a lesser resistivity than the layer of titanium.

20. (previously added) The semiconductor bridge igniter of claim 19 further comprising a pair of electrical leads, one connected to a respective one of the electrically conductive lands.

21. (currently amended) A method for initiating an energetic material using a semiconductor bridge igniter comprising a substrate, an electrical bridge structure disposed on the substrate, the bridge structure comprising a layer of a semiconductor material having a negative coefficient of electrical conductivity at temperatures above ambient temperature and having disposed thereover a layer of solid metal, the bridge structure comprising a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section, and a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed;

the method comprising applying a voltage across the lands to generate ohmic heating sufficient to melt the solid metal and remove the solid metal from between the bridge section and the energetic material, and to vaporize the semiconductor material in the presence of the energetic material.

22. (currently amended) The method of claim 21 comprising applying the voltage to generate a current through the metal and thereby heat the solid metal and the semiconductor material thereunder to a temperature at which the semiconductor material has a lower resistance than the solid metal and then generating a current through the semiconductor material to heat the semiconductor material to temperatures suffi-

cient to melt the solid metal ~~and to vaporize~~ before the semiconductor material vaporizes.

23. (previously added) The method of claim 21 or claim 22 wherein the metal is reactive with oxygen.

24. (previously added) The method of claim 21 or claim 22 wherein the metal consists essentially of titanium.